37371

EBASCO

REM III PROGRAM

REMEDIAL PLANNING ACTIVITIES AT SELECTED UNCONTROLLED HAZARDOUS SUBSTANCE DISPOSAL SITES WITHIN EPA REGIONS I-IV

EPA CONTRACT 68-01-7250

EBASCO SERVICES INCORPORATED

EPA WORK ASSIGNMENT NUMBER: 10-26A2.0
EPA CONTRACT NUMBER: 68-01-7250
EBASCO SERVICES INCORPORATED

FIELD SAMPLING AND ANALYSIS PLAN
RI/FS OVERSIGHT
ASBESTOS DUMP
MILLINGTON, NEW JERSEY

August 1986

NOTICE

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FIELD SAMPLING AND ANALYSIS PLAN
RI/FS OVERSIGHT
ASBESTOS DUMP

MILLINGTON, NEW JERSEY

August 1986

Prepared by:

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SECTION I - FIELD SAMPLING AND ANALYSIS PLAN

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1.0 INTRODUCTION

This document presents the Field Sampling and Analysis Plan to the RI/FS oversight activities to be undertaken by Ebasco Services, Incorporated (Ebasco) at the Asbestos Dump Site in Millington, New Jersey. The Field Sampling and Analysis Plan (FSAP) defines the procedures to be followed during all oversight activities. Specifically, the FSAP addresses:

- o Standard Operating Procedures (SOP) for Activities Related to Receipt of Split Samples
- o Number, Location and Types of Samples
- o Chain-of-Custody
- o Sample Packaging and Shipment
- o Decontamination
- o QA/QC of Field Sampling and Procedures for Field Changes and Corrective Actions
- o Responsibilities of Site Personnel

Each SOP and QA/QC protocol is in accordance with REM III and EPA Region II guidelines and the REM III and site-specific Health and Safety Plan. Any changes required in these SOPs and protocols due to field conditions should be recorded in the site logbook by the Field Operations Leader, and documented on a Field Change Request Form, Figure 3-1.

The purpose of the oversight is to observe Fred C. Hart Associates' activities for compliance with approved project procedures and perform duplicate analyses of samples for confirmation and comparison. Ebasco will also review and comment on Fred C. Hart Associates' Remedial Investigation and Feasibility Study draft reports.

2.0 GENERAL SITE OPERATIONS

2.1 BRIEF DESCRIPTION OF SAMPLING PROGRAM

For the oversight effort, Ebasco will receive split samples from Fred C. Hart Associates. Approximately, ten percent of the proposed samples, as estimated in the Fred C. Hart Associates Draft Site Operations Plan will be split with Ebasco and analyzed for full priority pollutants and asbestos by a designated EPA Contact Laboratory.

FIGURE 3-1

EBASCO SERVICES INCORPORATED
FIELD CHANGE REQUEST

EPA Work Assignment No.	EBASCO	Work Charge Number	Field Change No. FCR

To _____ Location _____ Date _____

Description:

_____

_____

_____

_____

Recommended Disposition:

_____

_____

_____

_____

_____
Field Operations Leader (Signature) Date

Disposition:

_____

_____

_____

_____

_____
Site Manager Date

Distribution: Regional Manager
Quality Assurance Manager
Site Manager
Field Operations Leader
Others as required _____ _____ _____ _____

Table 2-1 lists the samples proposed by Fred C. Hart Associates and the split samples to be taken by Ebasco. This table has been revised from Table 2-1 in the Work Plan for RI/FS Oversight at the Asbestos Dump Site, Millington, New Jersey, May 22, 1986.

Fred C. Hart Associates will collect 21 surface water samples from the Passaic River and its tributaries within the study area. Ebasco will split two of these samples. At 15 of the 21 surface water sampling locations, sediment samples will also be taken. Ebasco will split two of these sediment samples. All of the surface water and sediment samples will be analyzed for priority pollutants plus library scan and asbestos.

The proposed groundwater monitoring program consists of the sampling of 23 monitoring wells and 10 private potable wells within the study area. Ebasco will split 3 groundwater monitoring well samples and 1 potable well sample and these will be analyzed for priority pollutants plus library scan and asbestos.

Fred C. Hart Associates will select approximately 40 subsurface soil samples for analysis during the subsurface Investigations. Ebasco will split 4 of these samples to be analyzed for priority pollutants plus library scan.

In addition to the sampling described above, Fred C. Hart Associates will conduct two subsequent sampling surveys of the groundwater monitoring wells and at the surface water sample locations as described in Section 2.10.5 of the Draft Site Operations Plan prepared by Hart. These 88 additional samples will be analyzed for "key parameters" as determined by Hart from previous priorty pollutant analysis. Ebasco will split 10 of these samples and will have them analyzed for the "key parameters" as indicated by Fred C. Hart Associates.

2.2 REM III FIELD TECHNICAL GUIDELINES

Ebasco's Field Technical Guidelines developed for the REM III Program are intended to provide general technical guidance for project activities and to ensure quality work. The guidelines do not take precedence over the requirements of the project plans and procedures, and several have been modified accordingly for the needs of this project (see Section 3.2 of this plan). A list of applicable guidelines appears below:

FT-7.05 - Sample Identification and Chain-of-Custody

FT-7.06 - Sample Preservation

FT-7.07 - Sample Packing and Shipping

FT-13.03 - Site Logbook

Copies of the above guidelines are provided in Appendix A.

TABLE 2-1

ASBESTOS DUMP SITE ENFORCEMENT SUPPORT
PROPOSED SPLIT SAMPLING PROGRAM
REVISED FROM WORK PLAN

Sample Type	Samples Proposed to be Collected[a]	Samples Proposed To Be Split
Ambient Air	31	0
Surface Water	21	2
Sediment	15	2
Groundwater	33	4[c]
Subsurface Soil and Waste	40[b]	4
Surface and Groundwater Monitoring[d]	88	10

a Based on Table 2-2, page 2-19, Draft Site Operations Plan prepared by Fred C. Hart Associates.

b Does not include 24 shelbytube samples for engineering properties.

c Groundwater samples consist of two categories with different sampling schedules: groundwater monitoring samples (3 splits); and potable well samples (1 split).

d These samples will only be analyzed for key indicator parameters as described in Section 2.10.5 of the Draft Site Operations Plan prepared by Fred C. Hart Associates.

2.3 PERSONNEL RESPONSIBILITIES

The field team will consist of the following types of personnel:

- Field Operations Leader/Field Geologist - responsible for oversight activities and collection, packaging and shipping of split samples.
- Site Health and Safety Officer - responsible for the safety of all site personnel.

2.4 SAMPLE IDENTIFICATION

Each sample will be designated by an alphanumeric code, which will identify the project site, sample type, sample site, the depth, and then site location. Blanks will not be specifically identified as such in the sample number but will have a different (sequential) number. The sample numbers will be recorded on the sample label and in the field logbook.

The project code for the Millington Site is MI.

The sample type will be either soil, groundwater, sediment or surface water.

2.5 SAMPLE CONTAINER REQUIREMENTS

Sample container requirements are specified in Table 3-1 of Section 3.

2.6 SAMPLE HOLDING TIMES

Sample holding times are specified in Table 3-1 of Section 3.

2.7 SAMPLE PACKAGING AND SHIPPING

Samples should be packaged and shipped according to Guideline FT-7.07 (Appendix A). When sample shipments are to be sent, the receiving lab will be telephoned on that day or the following morning, to be notified of the shipment, airbill number, and number and type of samples being shipped.

2.8 DOCUMENTATION

The Field Operations Leader is required to keep a field notebook. This field notebook will be a bound weatherproof logbook that is to be filled out in the contaminated area at the sites of sample collection. It will contain sample particulars including sample number, sample collection time, sample location, sample descriptions, sampling method used, weather conditions and tide level, field measurements, name of sampler, and any other site specific observations. In addition, it will include calibration of equipment, details on deviations from protocol, visitor's names, community contacts, lab addresses, etc., and details on activities at the site as specified in Guideline FT-13.03 (Appendix A).

Chain-of-Custody Forms, Sample Labels, Custody Seals, and other sample documents will be filled out as specified in Guideline FT-7.05 (Appendix A).

All records will be retained by the Site Manager in a designated project file.

3.0 SAMPLING

3.1 NUMBER, LOCATION AND TYPES OF SAMPLES

The numbers and types of samples along with the appropriate sampling devices, volumes, containers, preservation techniques, SOP identifiers, holding times, field measurements and lab analyses are summarized in Table 3-1.

The sampling locations at the asbestos sites are specified in the EPA-approved work plan prepared by Fred C. Hart Associates.

3.2 SAMPLING METHODS

Fred C. Hart Associates will collect all samples and supply Ebasco with the split samples. Ebasco's oversight personnel will monitor all sampling methods for adherence to the EPA approved Site Operations Plan. Any deviations from the Site Operations Plan will be recorded by the Field Operations Leader in the site logbook.

3.3 DECONTAMINATION

As presented below, all equipment involved in field sampling activities will be decontaminated prior to and subsequent to sampling. Equipment leaving the site will also be decontaminated as called for in the Health and Safety Plan.

Extraneous contamination and cross-contamination will be controlled using the decontamination procedure and by thoroughly decontaminating or changing sampler's gloves between samples.

In the event that Hart personnel wish to deviate from the approved Site Plan, they shall inform the Field Operations Leader who will then initiate a Field Change Request as described in Section 3.4.

TABLE 3-1

TYPE	NUMBER	SAMPLE VOLUME	SAMPLE CONTAINER	PRESERVATION	HOLDING TIMES	LAB ANALYSIS
Sediment	2	Fill Container to Top with No Head Space	(2) 40 ml Glass	Cool to 4 C	10 Days	Volatile Organics
Subsurface		Fill Container	(1) 8 oz. Glass	Cool to 4°C	7 Days	Extractable Organics
Soil and Waste	4	Fill Container	(1) 8 oz. Glass	Cool to 4°C	6 Months Metals 14 Days Cyanide	Metals & Cyanide
		Fill Container	(1) 8 oz. Glass	Cool to 4°C	Not Applicable	Asbestos
Groundwater	4	Fill to Top with No Head Space	(2) 40 ml Glass	Cool to 4°C	7 Days	Volatile Organics
Surface Water	2	Fill	(4) 1 Amber Glass	Cool to 4°C	5 Days Extract; 40 Days to Analyse	Extractable Organics
		Fill	(1) 1 Polyethylene	Cool to 4°C add HNO_3 to PH =12	6 Months	Metals
		Fill	(1) 1 Polyethylene	Cool to 4°C add NaOH to pH = 12	14 Days	Cyanide
		Fill	(2) 1 Polyethylene	Cool to 4°C	Not Applicable	Asbestos

Personnel directly involved in equipment decontamination will wear protective clothing, as specified in the Health and Safety Plan.

3.4 QA/QC PROCEDURES FOR FIELD CHANGES AND CORRECTIVE ACTION

3.4.1 Field Changes and Corrective Action

The Site Manager or his designee is responsible for all site activities. In this role the Site Manager at times is required to adjust the site programs to accommodate site specific needs. When it becomes necessary to modify a program, the Field Operations Leader will notify the Site Manager of the anticipated change and implement the necessary changes. The Regional Manager the EPA Remedial Project Manager and the Regional Project Officer will be notified. If changes made are later determined to be unacceptable, the action taken during the period of deviation will be evaluated in order to determine the significance of any departure from established program practices and action taken.

The changes in the program are documented on a Field Change Request for which is signed by the initiator and Site Manager. A typical Field Change Request Form utilized to document field changes is shown on Figure 3-1. The FCRs for each document shall be numbered serially starting with the number "1".

The Site Manager is responsible for the controlling, tracking and implementation of the identified changes. Completed field change requests are distributed to affected parties which will include as a minimum: Regional Manager, Site Manager, Field Operations Leader and Quality Assurance Manager.

APPENDIX A

FIELD TECHNICAL GUIDANCE DOCUMENTS

EBASCO

EBASCO SERVICES INCORPORATED

ENVIRONMENTAL PROTECTION AGENCY

REM III PROGRAM GUIDELINES

CATEGORY:	TITLE:	No. FT-7.05
Field Technical	Sample Identification and Chain-of-Custody	DATE: 12/20/85
PREPARED BY: R T Fellman Robert Fellman	APPROVED BY: M K Yates Michael K Yates	REVISION: 0

CONTENTS

CATEGORY:	TITLE:	No. FT-7.05
Field Technical	Sample Identification and Chain-of-Custody	DATE: 12/20/85

REVISION 0

1.0 PURPOSE

The purpose of this guideline is to provide information on chain-of-custody procedures to be used under the REM III Program.

2.0 SCOPE

This guideline describes the steps necessary for transferring samples through the use of Chain-of-Custody Records. A Chain-of-Custody Record is required, without exception, for the tracking and recording of all samples collected for on-site or off-site analysis (chemical or geotechnical) during program activities. Use of the Chain-of-Custody Record Form creates an accurate written record that can be used to trace the possession and handling of the sample from the moment of its collection through analysis and its introduction as evidence. This guideline identifies the necessary custody records and describes their completion.

This guideline does not take precedence over region-specific or site-specific requirements for chain-of-custody.

3.0 DEFINITIONS

Chain-of-Custody Record Form - A Chain-of-Custody Record Form is a printed two-part form that accompanies a sample or group of samples as custody of the sample(s) is transferred from the custodian to the subsequent custodian. Attachments C-1 through C-4 show the Chain-of-Custody Records used by EPA Region I through IV, respectively. A Chain-of-Custody Record Form is a controlled document, provided by the regional office of EPA. One copy of the form must be retained in the project file.

Controlled Document - A consecutively-numbered form released by EPA or Zone Program Management Office (ZPMO) for use on a particular work assignment. All unused forms must be returned or accounted for at the conclusion of the assignment.

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Custodian - The person responsible for the custody of samples at a particular time, until custody is transferred to another person (and so documented), who then becomes custodian. A sample is under your custody if:

- It is in your actual possession.
- It is in your view, after being in your physical possession.
- It was in your physical possession and then you locked it up to prevent tampering.
- It is in a designated and identified secure area.

Sample - A sample is physical evidence collected from a facility or the environment, which is representative of conditions at the point and time that it was collected.

4.0 RESPONSIBILITIES

Field Operations Leader - Responsible for determining that chain-of-custody procedures are implemented up to and including release to the shipper.

Field Samplers - Responsible for initiating the Chain-of-Custody Record and maintaining custody of samples until they are relinquished to another custodian, to the shipper, or to the common carrier.

Remedial Investigation Leader - Responsible for determining that chain-of-custody procedures have been met by the sample shipper and analytical laboratory.

5.0 GUIDELINES

5.1 OVERVIEW

The term "chain-of-custody" refers to procedures which ensure that evidence presented in a court of law is what it is represented to be. The chain-of-custody procedures track the evidence from the time and place it is first obtained to the courtroom and, secondly, provide security for the evidence as it

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is moved and/or passes from the custody of one individual to another. In addition, procedures for consistent and detailed records facilitate the admission of evidence under Rule 803(b) of the Federal Rules of Evidence (P.L. 93-575).

Chain-of-custody procedures, recordkeeping, and documentation are an important part of the management control of samples in the REM III Program. Regulatory agencies must be able to provide the chain of possession and custody of any samples that are offered for evidence, or that form the basis of analytical test results introduced as evidence. Written procedures must be available and followed whenever evidence samples are collected, transferred, stored, analyzed, or destroyed.

5.2 SAMPLE IDENTIFICATION

The method of identification of a sample depends on the type of measurement or analysis performed. When in-situ measurements are made, the data are recorded directly in bound logbooks or other field data records, with identifying information (project code, station numbers, station location, date, time, samplers), field observations, and remarks, and signed.

5.2.1 Sample Label

Samples, other than in-situ measurements, are removed and transported from the sample location to a laboratory or other location for analysis. Before removal, however, a sample is often divided into portions, depending upon the analyses to be performed. Each portion is preserved in accordance with the Sampling Plan. Each sample container is identified by a sample label (see Attachment A). Sample labels are provided by ZPMO or the REM III Regional Offices. The information recorded on the sample label includes:

- **Project** — EPA Work Assignment Number
- **Sample Number** — The unique sample number identifying this sample.
- **Date** — A six-digit number indicating the day, month, and year of sample collection; e.g., 12/21/85.

- **Time** — A four-digit number indicating the 24-hour time of collection (for example: 0954 is 9:54 a.m., and 1629 is 4:29 p.m.)
- **Medium** — Water, Soil, Sediment, Sludge, Leachate, etc.
- **Sample Type** — Grab or Composite.
- **Preservation** — Type, quantity, and concentration of preservative added.
- **Analysis** — Same as Analyses on Sample Identification Tag (see Section 5.2.2)
- **Sampled By** — Name of the sampler.
- **Lab #** — Sample number assigned by the receiving laboratory (not used for on-site analyses).
- **Remarks** — If for CLP analysis, include the CLP case or SAS number, and CLP sample number from the traffic report, SAS Packing List, or Dioxin Shipment Record (see Guideline FT-7.04). Also, pertinent observations of the sampler (e.g., sequence number for sequential samples).

Using just the EPA work assignment number on the sample label maintains the anonymity of sites. This may be necessary, even to the extent of preventing the laboratory performing analysis from knowing the identity of the site (e.g., if the laboratory is part of an organization that has performed previous work on the site).

5.2.2 Sample Identification Tag

A Sample Identification Tag (Attachment B) must also be used for samples collected for CLP (Contract Laboratory Program) analysis. The Sample Identification Tag is a white, waterproof

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Field Technical	Sample Identification and Chain-of-Custody	DATE: 12/20/85

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paper label, approximately 3-by-6 inches, with a reinforced eyelet, and string or wire for attachment to the neck of the sample bottle. The Sample Tag is a controlled document, and is provided by the regional EPA office. Following sample analysis, the Sample Tag is retained by the laboratory as evidence of sample receipt and analysis.

The following information is recorded on the tag:

. Project Code	EPA Work Assignment Number
. Station Number	Same as Sample Number on Sample Label
. Month/Day/Year	Same as Date on Sample Label
. Time	Same as Time on Sample Label
. Designate: Comp/Grab	Same as Sample Type on Sample Label
. Station Location	Site-specific station location designation defined in Site Operation Plan
. Samplers	Same as Sampled By on Sample Label
. Preservative	Yes or No
. Analyses	Check appropriate box(es)
. Remarks	Same as Remarks on Sample Label (make sure CLP Case No/SAS No. and CLP sample numbers are recorded)
. Lab Sample No.	Same as Lab # on Sample Label

The tag is then tied round the neck of the sample bottle.

If the sample is to be split, it is aliquoted into similar sample containers. Identical information is completed on the label attached to each split and one of these is marked "Split" on the "Remarks" line.

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Blank, duplicate, or field spike samples should not be identified as such on the label, as this may compromise the quality control function. Sample blanks, duplicates, spikes and splits are defined in Guideline FT-7.04.

5.3 CHAIN-OF-CUSTODY PROCEDURES

After collection, separation, identification, and preservation, the sample is maintained under chain-of-custody procedures until it is in the custody of the analytical laboratory and has been stored or disposed of.

5.3.1 Field Custody Procedures

1. Samples are collected as described in the site-specific Sampling Plan. Care must be taken to record precisely the sample location and to ensure that the sample number on the label matches the sample log sheet and Chain-of-Custody Record exactly.

2. The person undertaking the actual sampling in the field is responsible for the care and custody of the samples collected until they are properly transferred or dispatched.

3. When photographs are taken of the sampling as part of the documentation procedure, the name of the photographer, date, time, site location, and site description are entered sequentially in the site logbook as photos are taken. Once developed, the photographic prints shall be serially numbered, corresponding to the logbook descriptions.

4. Sample labels shall be completed for each sample, using waterproof ink unless prohibited by weather conditions, e.g., a logbook notation would explain that a pencil was used to fill out the sample label because a ballpoint pen would not function in freezing weather.

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5.3.2 Transfer of Custody and Shipment

Samples are accompanied by a Chain-of-Custody Record Form. The Chain-of-Custody Records used in EPA Regions I through IV each differ slightly (See Attachments C-1 through C-4). The appropriate form should be obtained from the EPA Regional Office or REM III Regional Office in which the work takes place. When transferring the possession of samples, the individuals relinquishing and receiving will sign, date, and note the time on the Record. This Record documents sample custody transfer from the sampler, often through another person, to the analyst in the laboratory. The Chain-of-Custody Record is filled out as follows:

1. Enter header information (project number and name, CLP case No. or SAS No.) For each station number, enter date, time, composite/grab, station location, number of containers, analytical parameters, Traffic Report/SAS Packing List/Dioxin Shipment Record, and Sample Identification Tag Number (in Remarks column).

2. Sign, date, and enter the time under "Relinquished by" entry.

3. Make sure that the person receiving the sample signs the "Received by" entry, or enter the name of the carrier (e.g., UPS, Federal Express) under "Received by." Receiving laboratory will sign "Received for Laboratory by" on the lower line and enter the date and time.

4. Enter the bill-of-lading or Federal Express airbill number under "Remarks," if appropriate.

5. Place the original (top, signed copy) of the Chain-of-Custody Record Form in the appropriate sample shipping package. Retain a copy with field records.

6. Sign and date the custody seal, a 1- by 3-inch white paper label with black lettering and an adhesive backing. Attachment D is an example of a custody seal. The custody seal is part of the chain-of-custody process and is used to prevent tampering with samples after they have been collected in the field. Custody seals are provided by ZPMO or the REM III regional offices on an as-needed basis.

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7. Place the seal across the shipping container opening so that it would be broken if the container is opened.

8. Complete other carrier-required shipping papers.

The custody record is completed using black waterproof ink. Any corrections are made by drawing a line through and initialing and dating the change, then entering the correct information. Erasures are not permitted.

Common carriers will usually not accept responsibility for handling Chain-of-Custody Record Forms; this necessitates packing the record in the sample container (enclosed with other documentation in a plastic zip-lock bag). As long as custody forms are sealed inside the sample container and the custody seals are intact, commercial carriers are not required to sign off on the custody form.

If sent by mail, the package will be registered with return receipt requested. If sent by common carrier or air freight, proper documentation must be maintained.

The laboratory representative who accepts the incoming sample shipment signs and dates the Chain-of-Custody Record, completing the sample transfer process. It is then the laboratory's responsibility to maintain internal log books and custody records throughout sample preparation and analysis.

5.3.3 Receipt for Samples Form

Whenever samples are split with a private party or government agency, a separate Receipt for Samples Record Form (see Attachment E) is prepared for those samples and marked to indicate with whom the samples are being split. The person relinquishing the samples to the party or agency shall require the signature of a representative of the appropriate party acknowledging receipt of the samples. If a representative is unavailable or refuses to sign, this is noted in the "Received by" space. When appropriate, as in the case where the representative is unavailable, the custody record should contain a statement that the samples were delivered to the designated location at the designated time. This form must be completed and a copy given to the owner, operator, or agent-in-charge even if the offer for split samples is declined. The original is retained by the Field Operations Leader.

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6.0 REFERENCES

USEPA, 1984. User's Guide to the Contract Laboratory Program, Office of Emergency and Remedial Response, Washington, D.C.

Program Guideline FT-7.04 - Management of Sampling and Required Forms

7.0 ATTACHMENTS

Attachment A - Sample Label

Attachment B - Sample Identification Tag

Attachment C-1 - Chain-of-Custody Record Form for Use in Region I

Attachment C-2 - Chain-of-Custody Record Form for Use in Region II

Attachment C-3 - Chain-of-Custody Record Form for Use in Region III

Attachment C-4 - Chain-of-Custody Record Form for Use in Region IV

Attachment D - Chain-of-Custody Seal

Attachment E - Receipt for Samples Form

EBASCO PROJECT: _____

SAMPLE NO. _____

DATE: __/__/__ TIME: _____ HRS

MEDIUM: _____

TYPE: GRAB ☐ COMPOSITE ☐

PRESERVATION: _____

ANALYSIS: _____

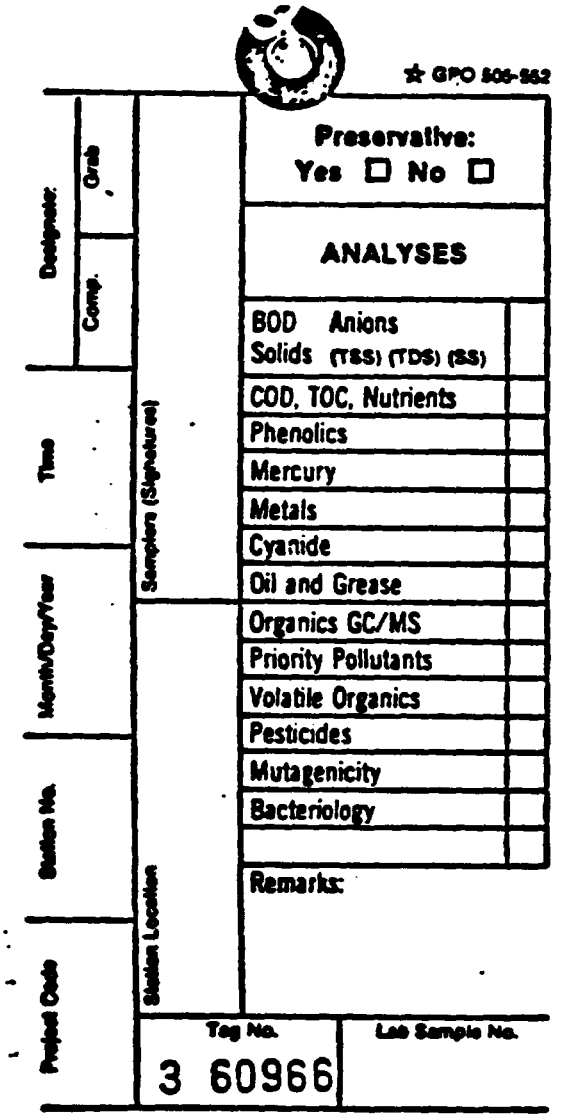
SAMPLED BY: _____

LAB NO.: _____

REMARKS: _____

ATTACHMENT A

SAMPLE LABEL

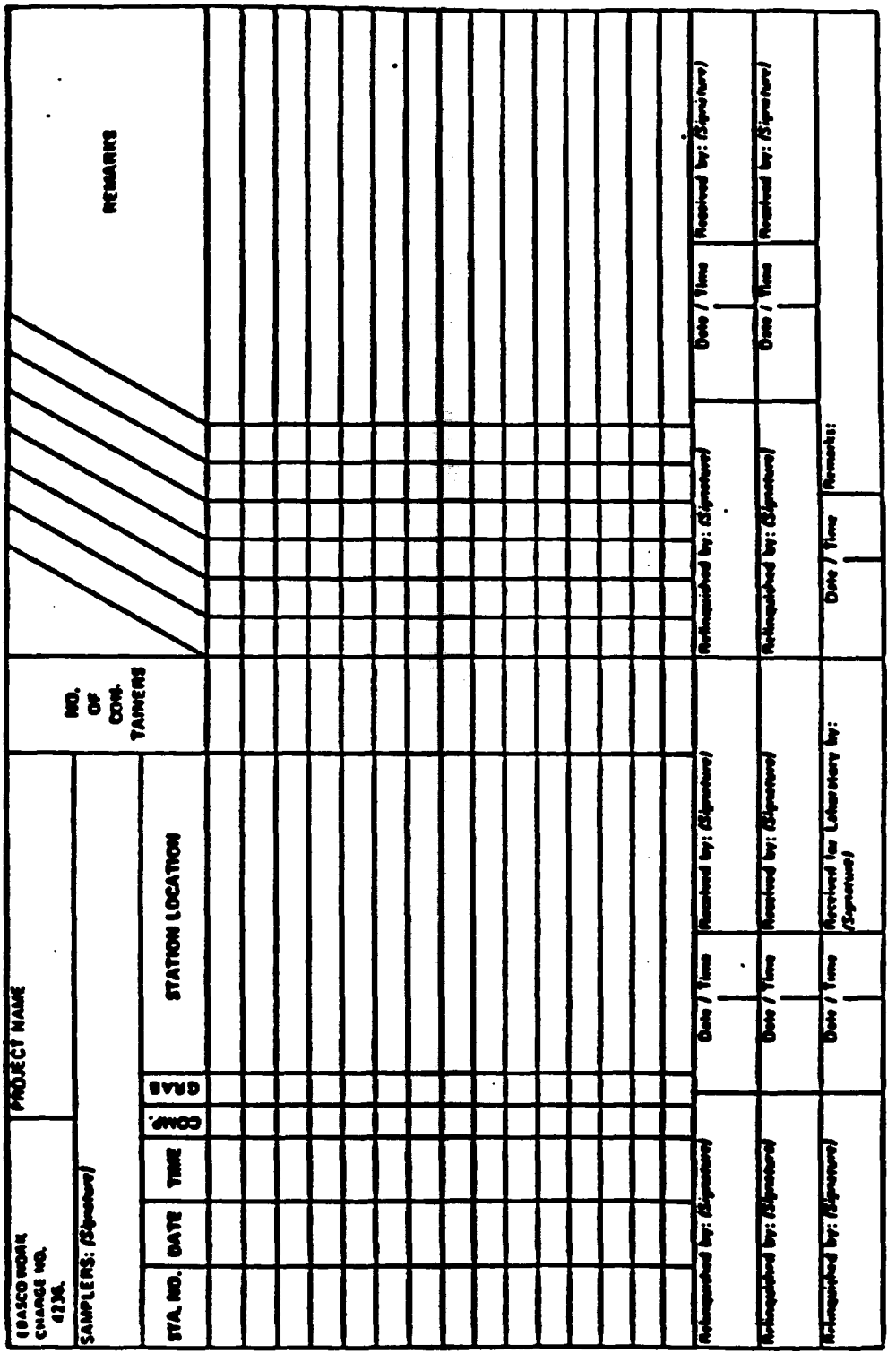


UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

EPA

ATTACHMENT B

SAMPLE IDENTIFICATION TAG



ATTACHMENT C-1

CHAIN-OF-CUSTODY RECORD FORM FOR USE IN REGION I
(Original is 8½ x 11")

CHAIN OF CUSTODY RECORD

ENVIRONMENTAL PROTECTION AGENCY – REGION II
SURVEILLANCE & ASSISTANCE DIVISION
EDISON, NEW JERSEY 08837

Name of Unit and Address		
Sample Number	Number of Containers	Description of Samples

Person Assuming Responsibility for Samples	Time	Date

Sample Number	Relinquished By	Received By	Time	Date	Reason for Change of Custody

ATTACHMENT C-2

CHAIN-OF-CUSTODY RECORD FORM FOR USE IN REGION II
(Original is 8 x 10-1/2")

ENVIRONMENTAL PROTECTION AGENCY
Office of Enforcement

REGION 3
Curtis Bldg., 6th & Walnut Sts.
Philadelphia, Pennsylvania 19106

CHAIN OF CUSTODY RECORD

PROJ. NO.	PROJECT NAME	NO. OF CONTAINERS	REMARKS
SAMPLERS: (Signature)			

STA. NO.	DATE	TIME	COMP.	GRAB	STATION LOCATION		

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks	

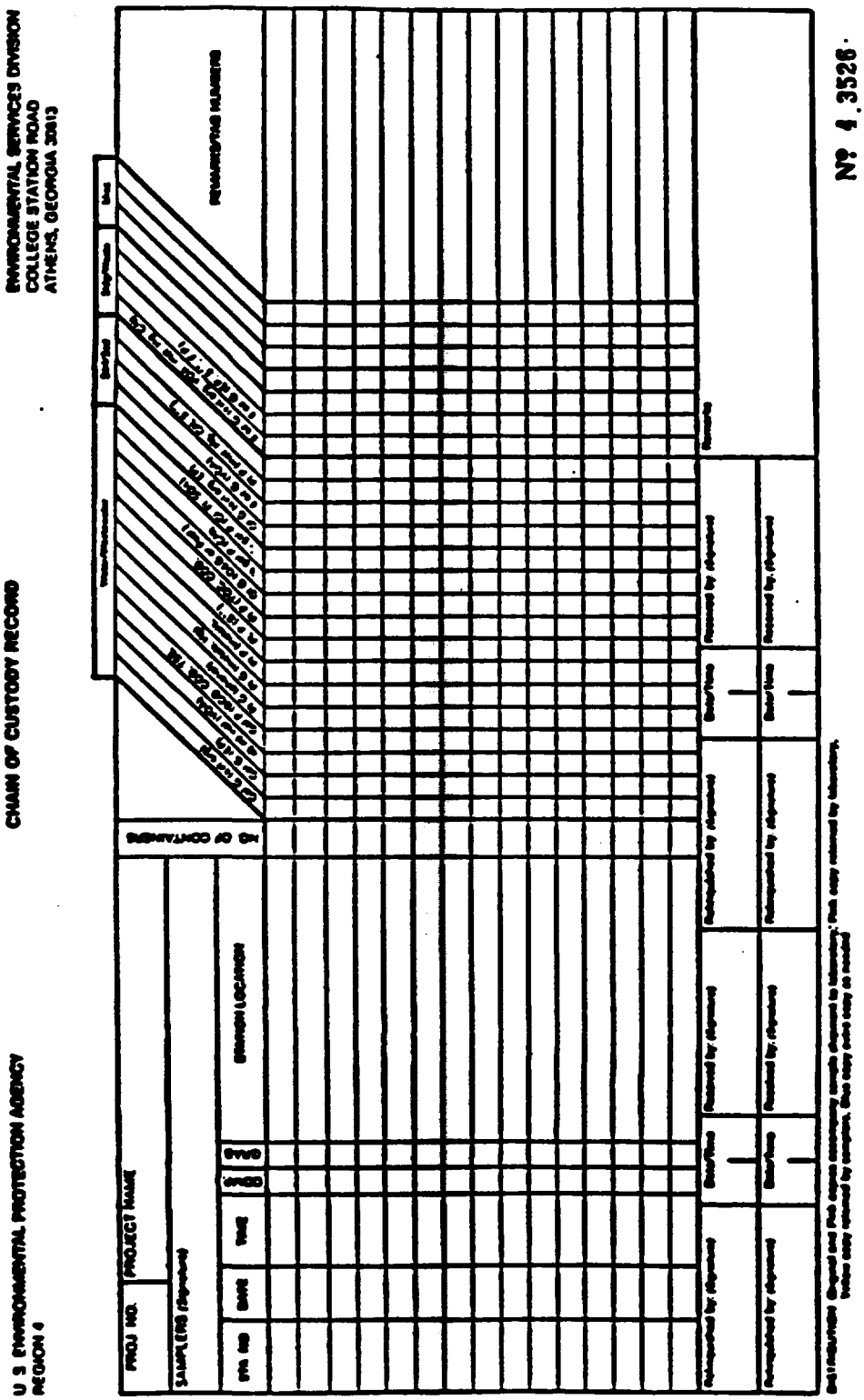
Distribution: Original Accompanies Shipment; Copy to Coordinator Field Files

3-15966

ATTACHMENT C-3

CHAIN OF CUSTODY RECORD FORM FOR USE IN REGION III
(Original is 8-1/2 x 11 3/4")

FT-7.05
REVISION 0



ATTACHMENT C-4

CHAIN-OF-CUSTODY RECORD FORM FOR USE IN REGION IV
(Original is 8-1/2 x 14")

ATTACHMENT D

CHAIN-OF-CUSTODY SEAL

ATTACHMENT E

RECEIPT FOR SAMPLES FORM
(Original is 8½ x 11")

RECEIPT FOR SAMPLES

EPA WORK ASSIGNMENT NUMBER ______

EBASCO WORK CHARGE NO. 4236.	PROJECT NAME	Name of Facility
SAMPLERS: (Signature)		Facility Location
Split Samples Offered ( ) Accepted ( ) Declined		

STA. NO.	DATE	TIME	COMP.	GRAB	SPLIT SAMPLES	TAG NUMBERS	STATION DESCRIPTION	NO. OF CON-TAINERS	REMARKS

Transferred by: (Signature)		Received by: (Signature)		Telephone
Date	Time	Title	Date	Time

FT-7.05
REVISION 0

ASB 002 0697

CATEGORY: Field Technical	TITLE: Sample Preservation	No. FT-7.06 DATE: 03/04/86
PREPARED BY: R T Fellman	APPROVED BY: M K Yates	REVISION: 0

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1.0 PURPOSE

This Field Technical guideline describes the appropriate containers to be used for samples depending on the analyses to be performed, and the steps necessary to preserve the samples when shipped offsite for chemical analysis.

2.0 SCOPE

Different types of chemicals react differently with sample containers made of various materials. For example, trace metals adsorb more strongly to glass than to plastic, while many organic chemicals may dissolve various types of plastic containers. It is therefore critical to select the correct container in order to maintain the quality of the sample prior to analysis.

Many water and soil samples are unstable, and therefore require preservation when the time interval between field collection and lab analysis is long enough to produce changes in either the concentration or the physical condition of the constituent(s) requiring analysis. While complete and irreversible preservation of samples is not possible, preservation does retard the chemical and biological changes that inevitably take place after the sample is collected.

Preservation techniques are usually limited to pH control, chemical addition(s) and refrigerating/freezing. Their purpose is to (1) retard biological activity, (2) retard hydrolysis of chemical compounds/complexes, (3) reduce constituent volatility, and (4) reduce adsorption effects.

3.0 DEFINITIONS

HCl - Hydrochloric acid

H_2SO_4 - Sulfuric acid

HNO_3 - Nitric acid

NaOH - Sodium Hydroxide

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Normality (N) - Concentration of a solution expressed as equivalents per liter, an equivalent being the amount of a substance containing one gram-atom of replaceable hydrogen or its equivalent. Thus a one molar solution of HCl, containing one gram-atom of H, is "one normal," while a one molar solution of H_2SO_4, containing two gram-atoms of H, is "two normal."

4.0 RESPONSIBILITIES

The Field Operations Leader retains overall responsibility for the proper storage and preservation of samples. During the actual collection of samples, the sampling technician(s) will be directly responsible for the bottling, preservation, labeling and custody of the samples they collect until released to another party for storage or transport to the analytical laboratory.

5.0 GUIDELINES

5.1 SAMPLE CONTAINERS

For most samples and analytical parameters either glass or plastic containers are satisfactory. In general, if the analyte(s) to be determined is organic in nature, the container should be made of glass. If the analyte(s) is inorganic, then the container should be plastic. Since container specifications will depend on the analyte and sample matrix types (as indicated in Attachment A) duplicate samples should be taken when both organic and inorganic analyses are required. Containers should be kept in the dark (to minimize biological or photooxidation/photolysis breakdown of constituents) until they reach the analytical laboratory. The sample container should allow approximately 5-10% air space ("ullage") to allow for expansion/vaporization if the sample is heated during transport (1 liter of water at 4°C expands by 15 ml if heated to 130°F/55°C). If a head space is not desired for a particular analysis (i.e., volatile organic analyses), the container should be placed inside another container, to provide the desired head space.

For CLP laboratories, containers will be obtained through the CLP Sample Management Office. For Responsible party actions or non-CLP laboratories, the laboratory should provide containers that have been cleaned according to U.S. EPA procedures. Ordering of sample containers is described in FT-7.04. Sufficient lead time should be allowed. Shipping containers for samples, consisting of sturdy ice chests, are provided by the laboratory of the remedial investigation contractor.

Once opened, container must be used at once for storage of a particular sample. Unused but opened containers are to be considered contaminated and must be discarded; because of the potential for introduction of contamination, they cannot be reclosed and saved for later use. Likewise, any unused containers which appear contaminated upon receipt, or which are found to have loose caps or missing Teflon liners (if required for that container) should be discarded.

General sample container and sample volume requirements are listed in Attachment A. Specific container requirements are listed in Attachment B.

5.2 PRESERVATION TECHNIQUES

The preservation techniques to be used for various analytes are listed in Attachments A and B. Reagents required for sample preservation will either be added to the sample containers by the laboratory prior to their shipment to the Field or added in the Field. In general, aqueous samples of low concentration organics (or soil samples of low or medium concentration organics) are cooled to 4°C. Medium concentration aqueous samples and high hazard organics samples are not preserved. Low concentration aqueous samples for metals are acidified with HNO_3 while medium concentration and high hazard aqueous metal samples are not preserved. Low or medium concentration soil samples for metals are cooled to 4°C while high hazard samples are not preserved.

The following subsections describe the procedures for preparing and adding chemical preservatives. Attachments A and B indicate the specific analytes which require these preservatives.

5.2.1 Addition of Acid (H_2SO_4, HCl or HNO_3) or Base

Addition of the following acids or bases may be specified for sample preservation; these reagents should be analytical reagent (AR) grade and should be diluted to the required concentration with double-distilled, deionized water in the laboratory, before Field sampling commences:

Acid Base	Concentration	Normality	Amount for Acidification*
HCl	1:1 dilution of conc. HCl	6N	5-10 ml
H_2SO_4	1:1 dilution of conc. H_2SO_4	18N	2-5 ml
HNO_3	Undiluted conc. HNO_3	16N	2-5 ml
NaOH	400g Solid NaOH in 870 ml water	10N	2 ml**

The approximate volumes needed to acidify one liter of neutral water to a pH of less than 2 (or raise the pH to 12) are shown in the last column of the above table. These volumes are only approximate; if the water is more alkaline, contains inorganic or organic buffers, or contains suspended particles, more acid may be required. The final pH must be checked using narrow-range pH paper.

Sample acidification or base addition should proceed as follows:

1. Check initial pH of sample with wide range (0-14) pH paper.

2. Fill sample bottle to within 5-10 ml of final desired volume and add about 1/2 of estimated acid or base required, stir gently and check pH with medium range pH paper (pH 0-6 or pH 7.5-14, respectively).

---

* Amount of acid to add (at the specified strength) per liter of water to reduce the sample pH to less than 2, assuming that the water is initially at pH 7, and is poorly buffered and does not contain particulate matter.

** To raise pH of 1 liter of water to 12.

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3. Add acid or base a few drops at a time while stirring gently. Check for final pH using narrow range (0-2.5 or 11-13, respectively) pH paper; when desired pH is reached, cap sample bottle and seal.

   Never dip pH paper into the sample; apply a drop of sample to the pH paper using the stirring rod.

5.2.2 Cyanide Preservation

Pre-sample preservation is required to prevent oxidizing agents such as chlorine from decomposing most of the cyanides. To test for oxidizing agents, place a drop of the sample on potassium iodide-starch test paper (KI-starch paper); a blue color indicates the need for treatment. Add ascorbic acid to the sample, a few crystals at a time, until a drop of sample produces no color on the KI-starch paper. Then add an additional 0.6g of ascorbic acid for each liter of sample volume. Add NaOH solution to raise pH to greater than 12 as described above.

Sulfide will adversely affect cyanide analyses. To test for sulfide place a drop of the sample on lead acetate test paper previously moistened with acetic acid buffer solution (pH 4). Darkening of the paper indicates the presence of sulfide. If sulfide is present, add cadmium nitrate powder (to form a yellow cadmium sulfide precipitate) until the lead acetate test yields negative results. Filter the sample to remove precipitate and add NaOH solution to the filtrate (to raise pH above 12). Avoid a large excess of cadmium and a long contact time in order to minimize a loss by complexation or occlusion of cyanide on the precipitated material.

5.2.3 Sulfide Preservation

Samples for sulfide analysis must be preserved by addition of 4 drops (0.2 ml) of 2N zinc acetate solution per 100 ml sample. The sample pH is then raised to 9 using NaOH solution (1-2 drops). The 2N zinc acetate solution is made by dissolving 220g of zinc acetate in 870 ml of distilled water to make 1 liter of solution.

5.2.4 Preservation of Organic Samples Containing Residual Chlorine

Some organic samples containing residual chlorine must be treated to remove this chlorine upon collection (see Attachment A). Test the samples for residual chlorine using EPA methods 330.4 or 330.5 (Field test kits are available for this purpose). If residual chlorine is present, add 0.008% sodium thiosulfate (80 mg per liter of sample).

5.2.5 Field Filtration

When the objective is to determine concentrations of disssolved inorganic constituents in a water system, the sample must be filtered through a non-metallic 0.45 micron membrane filter immediately after collection. A filtration system consisting of three to six filtration towers attached to a manifold and vacuum pump is recommended if much filtration if required in the field. Discard the first 20 to 50 mL of filtrate from each sample to rinse the filter and filtration apparatus. This technique minimizes the risk of altering the composition of the samples by the filtering operation. For analysis of dissolved metals, the filtrate is collected in a suitable bottle (see Section 5.1) and is immediately acidified to pH 2.0 or less with nitric acid whose purity is consistent with the measurement to be made. Inorganic anionic constituents may be determined using a portion of the filtrate that has not been acidified.

Samples used for determining temperature, dissolved oxygen, Eh, and pH should not be filtered. Do not use vacuum filtering prior to determining carbonate and bicarbonate concentrations because it removes dissolved carbon dioxide and exposes the sample to the atmosphere. Pressure filtration can be done using water pressure from the well. If gas pressure is required, use an inert gas such as argon or nitrogen.

Do not filter samples for analysis of volatile organic compounds. If samples are to be filtered for analyzing other dissolved organic constituents, use a glass-fiber or metal-membrane filter and collect the samples in a suitable container (see Section 5.1). Because most organic analyses require extraction of the entire sample, do not discard any of it. After filtering, the membrane containing the suspended fraction

can be sealed in a glass container and analyzed separately as soon as practicable. Total recoverable inorganic constituents may be determined using a second, unfiltered sample collected at the same time as the sample for dissolved constituents.

6.0 REFERENCES

American Public Health Association, 1981. Standard Methods for the Examination of Water and Wastewater. 15th Edition. APHA, Washington, DC.

USEPA, 1984. "Guidelines Establishing Test Procedures for the Analysis of Pollutants under the Clean Water Act." Federal Register, Vol. 49 (209), Oct. 26, 1984, p. 43234.

USEPA, 1979. Methods for Chemical Analysis of Water and Wastes. EPA-600/4-79-020. USEPA-EMSL, Cincinnati, OH.

7.0 ATTACHMENTS

Attachment A - General Sample Container and Preservation Requirements CERCLA/RCRA Samples

Attachment B - Required Containers, Preservation Techniques, and Holding Times (3 Sheets)

	SAMPLE TYPE & CONCENTRATION	CONTAINER[1]	SAMPLE SIZE	PRESERVATION[2]	HOLDING TIME[2]
WATER					
Organics (GC & GC/MS)	VOA	borosilicate glass	2 x 40 ml	Cool to 4°C	7 days
	Extractables				
	Low	amber glass	2 x 2 l or 4 x 1 l	Cool to 4°C	5 days to extraction 40 days after extraction
	Medium	wide-mouth glass	4 x 32 oz	None	Same as above
Inorganics	Metals				
	Low	high density (h.d.) polyethylene	1 l	HNO_3 to pH ≤2	6 months (Hg-30 days)
	Medium	wide-mouth glass	16 oz	None	6 months
	Cyanide				
	Low	h.d. polyethylene	1 l	NaOH to pH >12	14 days
	Medium	wide-mouth glass	16 oz	None	
Organic/Inorganic	High Hazard	8 oz wide-mouth glass	6 oz	None	14 days
COD	--	h.d. polyethylene	0.5 l	H_2SO_4 to pH <2	28 days
TOC	--	h.d. polyethylene	0.5 l	HCl to pH <2	28 days
Oil & Grease	--	glass	1.0 l	H_2SO_4 to pH <2	28 days
Phenols	--	h.d. polyethylene	1.0 l	H_2SO_4 to pH <2	28 days
General Chemistry	--	h.d. polyethylene	1.0 l	None	---
SOIL					
Organics (GC & GC/MS)	VOA	2 x 120 ml (4 oz) wide-mouth glass	240 ml	Cool to 4°C	10 days
	Extractables				
	Low/Medium	8 oz or 2 x 4 oz (120 ml) wide-mouth glass	6 oz	Cool to 4°C	10 days to extraction 40 days after extraction
Inorganics	Low/Medium	8 oz or 2 x 4 oz (120 ml) wide-mouth glass	6 oz	Cool to 4°C	NA
Organic/Inorganic	High Hazard	8 oz (120 ml) wide-mouth glass	6 oz	None	NA
Dioxin	All	4 oz (120 ml) wide-mouth glass	4 oz	None	NA
EP Toxicity	All	250 ml h.d. polyethylene	200 grams	None	NA
Air					
Volatile Organics	Low Medium	Charcoal Tube 7 cm long, 6 mm OD, 4 mm ID	100 l air	Cool to 4°C	NA

1. All glass containers should have Teflon cap liners or septa.
2. See Attachment B.

SAMPLE CONTAINER AND PRESERVATION REQUIREMENTS CERCLA/RCRA SAMPLES

Parameter No./Name	Container[1]	Preservation[2,3]	Maximum Holding Time[4]
INORGANIC TESTS:			
Acidity	P,G	Cool, 4°C	14 days
Alkalinity	P,G	Cool, 4°C	14 days
Ammonia	P,G	Cool, 4°C, H_2SO_4 to pH 2	28 days
Biochemical Oxygen Demand	P,G	Cool, 4°C	48 hours
Bromide	P,G	None required	28 days
Biochemical Oxygen Demand, Carbonaceous	P,G	Cool, 4°C	48 hours
Chemical Oxygen Demand	P,G	Cool, 4°C, H_2SO_4 to pH 2	28 days
Chloride	P,G	None required	28 days
Chlorine, Total Residual	P,G	None required	Analyze immediately
Color	P,G	Cool, 4°C	48 hours
Cyanide, Total and Amenable to Chlorination	P,G	Cool, 4°C, NaOH to pH 12, 0.6g ascorbic acid[5]	14 days[6]
Fluoride	P	None required	28 days
Hardness	P,G	HNO_3 to pH 2, H_2SO_4 to pH 2	6 months
Hydrogen Ion (pH)	P,G	None required	Analyze immediately
Kjeldahl and Organic Nitrogen	P,G	Cool, 4°C, H_2SO_4 to pH 2	28 days
Nitrate	P,G	Cool, 4°C	48 hours
Nitrate-Nitrite	P,G	Cool, 4°C, H_2SO_4 to pH 2	28 days
Nitrite	P,G	Cool, 4°C	48 hours
Oil and Grease	G	Cool, 4°C, H_2SO_4 to pH 2	28 days
Organic Carbon	P,G	Cool, 4°C, HCl or H_2SO_4 to pH 2	28 days
Orthophosphate	P,G	Filter immediately, Cool, 4°C	48 hours
Oxygen, Dissolved-Probe	G Bottle and top	None required	Analyze immediately
Oxygen, Dissolved-Winkler	G Bottle and top	Fix on site and store in dark	8 hours
Phenols	G	Cool, 4°C, H_2SO_4 to pH 2	28 days
Phosphorus (elemental)	G	Cool, 4°C	48 hours
Phosphorus, Total	P,G	Cool, 4°C, H_2SO_4 to pH 2	28 days
Residue, Total	P,G	Cool, 4°C	7 days
Residue, Filterable	P,G	Cool, 4°C	48 hours
Residue, Nonfilterable (TSS)	P,G	Cool, 4°C	7 days
Residue, Settleable	P,G	Cool, 4°C	48 hours
Residue, Volatile	P,G	Cool, 4°C	7 days
Silica	P	Cool, 4°C	28 days
Specific Conductance	P,G	Cool, 4°C	28 days
Sulfate	P,G	Cool, 4°C	28 days
Sulfide	P,G	Cool, 4°C, add zinc acetate plus sodium hydroxide to pH 9	7 days
Sulfite	P,G	None required	Analyze immediately
Surfactants	P,G	Cool, 4°C	48 hours
Temperature	P,G	None required	Analyze immediately
Turbidity	P,G	Cool, 4°C	48 hours
METALS:[7]			
Chromium VI	P,G	Cool, 4°C	24 hours
Mercury	P,G	HNO_3 to pH 2	28 days
Metals, except Chromium VI and Mercury	P,G	HNO_3 to pH 2	6 months

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Parameter No./	Container[1]	Preservation[2,3]	Maximum Holding Time[4]
ORGANIC TESTS:[6]			
Purgeable Halocarbons	G, Teflon-lined septum	Cool, 4°C, 0.008% $Na_2S_2O_3$[5]	14 days
Purgeable Aromatic Hydrocarbons	G, Teflon-lined septum	Cool, 4°C, 0.008% $Na_2S_2O_3$[5], HCl to pH 2[9]	14 days
Acrolein and Acrylonitrile	G, Teflon-lined septum	Cool, 4°C, 0.008% $Na_2S_2O_3$[5], adjust pH to 4-5[10]	14 days
Phenols[11]	G, Teflon-lined cap	Cool, 4°C, 0.008% $Na_2S_2O_3$[5]	7 days until extraction, 40 days after extraction[13]
Benzidines[11]	G, Teflon-lined cap	Cool, 4°C, 0.008% $Na_2S_2O_3$[5]	7 days until extraction[13]
Phthalate Esters[11]	G, Teflon-lined cap	Cool, 4°C	7 days until extraction, 40 days after extraction
Nitrosamines[11,14]	G, Teflon-lined cap	Cool, 4°C, store in dark, 0.008% $Na_2S_2O_3$[5]	7 days until extraction, 40 days after extraction
PCBs[11]	G, Teflon-lined cap	Cool, 4°C	7 days until extraction, 40 days after extraction
Nitroaromatics and Isophorone[11]	G, Teflon-lined cap	Cool, 4°C, 0.008% $Na_2S_2O_3$[5], store in dark	7 days until extraction, 40 days after extraction
Polynuclear Aromatic Hydrocarbons[11]	G, Teflon-lined cap	Cool, 4°C, 0.008% $Na_2S_2O_3$[5], store in dark	7 days until extraction, 40 days after extraction
Haloethers[11]	G, Teflon-lined cap	Cool, 4°C, 0.008% $Na_2S_2O_3$[5]	7 days until extraction, 40 days after extraction
Chlorinated Hydrocarbons[11]	G, Teflon-lined cap	Cool, 4°C	7 days until extraction, 40 days after extraction
TCDD[11]	G, Teflon-lined cap	Cool, 4°C, 0.008% $Na_2S_2O_3$[5]	7 days until extraction, 40 days after extraction
PESTICIDES TESTS:			
Pesticides[11]	G, Teflon-lined cap	Cool, 4°C, pH 5-9[15]	7 days until extraction, 40 days after extraction
RADIOLOGICAL TESTS:			
1-5 Alpha, beta and radium	P, G	HNO_3 to pH 2	6 months

TABLE 1 Notes

(1) Polyethylene (P) or Glass (G).

(2) Sample preservation should be performed immediately upon sample collection. For composite chemical samples each aliquot should be preserved at the time of collection. When use of an automated sampler makes it impossible to preserve each aliquot, then chemical samples may be preserved by maintaining at 4° until compositing and sample splitting is completed.

(3) When any sample is to be shipped by common carrier or sent through the United States Mails, it must comply with the Department of Transportation Hazardous Materials Regulations (49 CFR Part 172).

(4) Samples should be analyzed as soon as possible after collection. The times listed are the maximum times that samples may be held before analysis and still be considered valid. Samples may be held for longer periods only if the permittee, or monitoring laboratory, has data on file to show that the specific types of samples under study are stable for the longer time, and has received a variance from the Regional Administrator.

(5) Should only be used in the presence of residual chlorine.

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(6) Maximum holding time is 24 hours when sulfide is present. Optionally, all samples may be tested with lead acetate paper before pH adjustments in order to determine if sulfide is present. If sulfide is present, it can be removed by the addition of cadmium nitrate powder until a negative spot test is obtained. The sample is filtered and then NaOH is added to pH 12.

(7) Samples should be filtered immediately on-site before adding preservative for dissolved metals.

(8) Guidance applies to samples to be analyzed by GC, LC, or GC/MS for specific compounds.

(9) Sample receiving no pH adjustment must be analyzed within seven days of sampling.

(10) The pH adjustment is not required if acrolein will not be measured. Samples for acrolein receiving no pH adjustment must be analyzed within 3 days of sampling.

(11) When the extractable analytes of concern fall within a single chemical category, the specified preservative and maximum holding times should be observed for optimum safeguard of sample integrity. When the analytes of concern fall within two or more chemical categories, the sample may be preserved by cooling to 4°C, reducing residual chlorine with 0.008% sodium thiosulfate, storing in the dark, and adjusting the pH to 6-9; samples preserved in this manner may be held for seven days before extraction and for forty days after extraction. Exceptions to this optional preservation and holding time procedure are noted in footnote 5 (re: the requirement for thiosulfate reduction of residual chlorine) and footnotes 12, 13 (re: the analysis of benzidine).

(12) If 1,2-diphenylhydrazine is likely to be present, adjust the pH of the sample to 4.0±0.2 to prevent rearrangement to benzidine.

(13) Extracts may be stored up to 7 days before analysis if storage is conducted under an inert (oxidant-free) atmosphere.

(14) For the analysis of diphenylnitrosamine add 0.008% $Na_2S_2O_3$ and adjust pH to 7-10 with NaOH within 24 hours of sampling.

(15) The pH adjustment may be performed upon receipt at the laboratory and may be omitted if the samples are extracted within 72 hours of collection. For the analysis of aldrin, add 0.008% $Na_2S_2O_3$.

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EBASCO SERVICES INCORPORATED

EBASCO

ENVIRONMENTAL PROTECTION AGENCY
REM III PROGRAM GUIDELINES

CATEGORY:	TITLE:	No. FT-7.07
Field Technical	Sample Packaging and Shipping	DATE: 01/08/86
PREPARED BY: R T Fellman	APPROVED BY: M K Yates	REVISION: 0

CONTENTS

CATEGORY:	TITLE:	No. FT-7.07
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CONTENTS (Con't)

CATEGORY:	TITLE:	No. FT-7.07
Field Technical	Sample Packaging and Shipping	DATE: 01/08/86

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1.0 PURPOSE

This guideline provides instructions for sample packaging and shipping in accordance with U.S. Department of Transportation (DOT) regulations.

2.0 SCOPE

Samples collected at hazardous waste sites usually have to be transported elsewhere for analysis. This requires that the samples be appropriately preserved to prevent or minimize chemical alteration prior to analysis (see Guideline FT-7.06), and be transported to protect their integrity, as well as to protect against any detrimental effects from leakage or breakage. Regulations for packaging, marking, labeling, and shipping hazardous materials and wastes are promulgated by the U.S. Department of Transportation and described in the Code of Federal Regulations (49 CFR 171 through 177, in particular 172.402h, Packages Containing Samples). In general, these regulations were not intended to cover shipment of samples collected at controlled or uncontrolled hazardous waste sites or samples collected during emergency responses. However, the EPA has agreed through a memorandum of agreement to package, mark, label, and ship samples observing DOT procedures. The information presented here is for general guidance. More detailed information is contained in the Ebasco Hazardous Materials Transportation Guide (see Reference 2 in Section 6.0 of this guideline) and 49 CFR 171-177.

This guideline is applicable to all samples taken from uncontrolled hazardous substance sites for analysis at laboratories away from the site.

3.0 DEFINITIONS

Carrier - A person or firm engaged in the transportation of passengers or property.

Hazardous Material - A substance or material in a quantity and form which may pose an unreasonable risk to health and safety or property when transported in commerce ("commerce" here to include any traffic or transportation). Defined and regulated by DOT (49 CFR 173.2) and listed in Attachment A of this guideline.

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Hazardous Waste - Any substance listed in 40 CFR Subpart D (¥261.30 et seq) or otherwise characterized as ignitable, corrosive, reactive, or EP toxic as specified under 40 CFR Subpart C (¥261.20 et seq) that would be subject to manifest requirements specified in 40 CFR 262. Defined and regulated by EPA.

Marking - Applying the descriptive name, instructions, cautions, weight, or specification marks or combination thereof required to be placed outside containers of hazardous materials.

n.o.i. - Not otherwise indicated.

n.o.s. - Not otherwise specified.

ORM - Other regulated material.

Packaging - The assembly of one or more containers and any other components necessary to assure compliance with the minimum packaging requirements of 49 CFR 172, including containers (other than freight containers or overpacks), portable tanks, cargo tanks, tank cars, and multiunit tank car tanks.

Placard - Color-coded, pictorial sign depicting the hazard class symbol and name to be placed on all four sides of a vehicle transporting certain hazardous materials.

Reportable Quantity (RQ) - A parenthetical note of the form "(RQ-1000/454)" following an entry in the DOT Hazardous Materials table (49 CFR 172.101) indicates the reportable quantity of the substance in pounds and kilograms. If a spill of that amount or more of the substance occurs during transit or storage, a report must be filed with DOT according to ¥171.15-17 concerning hazardous materials incidents reports. If the material spilled is a hazardous waste, a report must always be filed, regardless of the amount, and must include a copy of the manifest. If the RQ notation appears, it must be shown either immediately before or after the proper shipping name on the shipping paper (or manifest). Most shipping papers and manifests will have a column designated "HM" which may be used for this purpose.

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4.0 RESPONSIBILITIES

Field Operations Leader or Team Sampling Leader - responsible for determining that samples are properly packaged and shipped.

Sampling personnel - responsible for implementing the packaging and shipping requirements. The chain-of-custody procedures and requirements are described in Guideline FT-7.05.

5.0 GUIDELINES

5.1 INTRODUCTION

Samples collected for shipment from a site should be classified as either environmental or hazardous material (or waste) samples. In general, environmental samples are collected off-site (for example from streams, ponds, or wells) and are not expected to be grossly contaminated with high levels of hazardous materials. On-site samples (for example, soil, water, and materials from drums or bulk storage tanks, obviously contaminated ponds, lagoons, pools, and leachates from hazardous waste sites) are considered hazardous. A distinction must be made between the two types of samples in order to:

- Determine appropriate procedures for transportation of samples. If there is any doubt, a sample should be considered hazardous and shipped accordingly.
- Protect the health and safety of laboratory personnel receiving the samples. Special precautions are used at laboratories when samples other than environmental samples are received.

5.2 ENVIRONMENTAL SAMPLES

5.2.1 Packaging

Environmental samples may be packaged following the procedures outlined in Section 5.4 for samples classified as "flammable liquids" or "flammable solids." Requirements for marking, labeling, and shipping papers do not apply.

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Environmental samples may also be packaged without being placed inside metal cans as required for flammable liquids or solids.

- Place sample container, properly identified and with a sealed lid, in a polyethylene bag, and seal the bag.
- Place sample in a fiberboard container or metal picnic cooler which has been lined with a large polyethylene bag.
- Pack with enough noncombustible, absorbent, cushioning materials to minimize the possibility of the container breaking.
- Seal large bag.
- Seal or close outside container.

5.2.2 Marking/Labeling

Sample containers must have a completed sample identification tag and the outside container must be marked "Environmental Sample." The appropriate side of the container must be marked "This End Up" and arrows placed appropriately. No DOT markings or labeling are required.

5.2.3 Shipping Papers

No DOT shipping papers are required. However, the appropriate chain-of-custody forms must be included with the shipment.

5.2.4 Transportation

There are no DOT restrictions on mode of transportation.

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5.3 DETERMINATION OF SHIPPING CLASSIFICATION FOR HAZARDOUS MATERIAL SAMPLES

Samples not determined to be environmental samples, or samples known or expected to contain hazardous materials, must be considered hazardous material samples and transported according to the requirements listed below.

5.3.1 Known Substances

If the substance in the sample is known or can be identified, package, mark, label, and ship according to the specific instructions for that material (if it is listed) in the DOT Hazardous Materials Table, 49 CFR 172.101. A copy of this table is available from Regional Program Offices or ZPMO.

Unz and Company have published the following steps to help in locating a proper shipping name from the Hazardous Materials Table, 49 CFR 172.101.

1. Look first for the chemical or technical name of the material, for example, ethyl alcohol. Note that many chemicals have more than one technical name, for example, perchlorethylene (not listed in 172.101) is also called tetrachloroethylene (listed in 172.101). It may be useful to consult a chemist for all possible technical names a material can have. If your material is not listed by its technical name then ...

2. Look for the chemical family name. For example, pentyl alcohol is not listed but the chemical family name is: alcohol, n.o.s. (not otherwise specified). If the chemical family name is not listed then ...

3. Look for a generic name based on end use. For example, Paint, n.o.s. or Fireworks, n.o.s. If a generic name based on end use is not listed then ...

4. Look for a generic family name based on end use, For example, Drugs, n.o.s. or Cosmetics, n.o.s. Finally, if your material is not listed by a generic family name but you suspect or know the material is hazardous because it meets the definition of one or more hazard classes, then:

5. You will have to go to the general hazard class for a proper shipping name. For example, Flammable Liquid, n.o.s., or Oxidizer, n.o.s.

5.3.2 Unknown Substances

For samples of hazardous substances of unknown content, select the appropriate transportation category according to the DOT Hazardous Materials Classification (Attachment A), a priority system of transportation categories.

The correct shipping classification for an unknown sample is selected through a process of elimination, utilizing Attachment A. Unless known or demonstrated otherwise (through the use of radiation survey instruments), the sample is considered radioactive and appropriate shipping regulations for "radioactive material" followed.

If radioactive material is eliminated, the sample is considered to contain "Poison A" materials (Attachment B), the next classification on the list. DOT defines "Poison A" as extremely dangerous poisonous gases or liquids of such a nature that a very small amount of gas, or vapor of the liquid, mixed with air is dangerous to life. Most Poison A materials are gases or compressed gases and would not be found in drum-type containers. Liquid Poison A would be found only in closed containers; however, all samples taken from closed drums do not have to be shipped as Poison A, which provides for a "worst case" situation. Based upon information available, a judgement must be made whether a sample from a closed container is a Poison A.

If Poison A is eliminated as a shipment category, the next two classifications are "flammable" or "nonflammable" gases. Since few gas samples are collected, "flammable liquid" would be the next applicable category. With the elimination of radioactive material, Poison A, flammable gas, and nonflammable gas, the sample can be classified as flammable liquid (or solid) and shipped accordingly. These procedures would also suffice for shipping any other samples classified below flammable liquids in the DOT classification table (Attachment A). For samples containing unknown material, categories listed below flammable liquids/solids on Attachment A are generally not used because showing that these materials are not flammable liquids (or

solids) requires flashpoint testing (see Guideline FT-7.13), which may be impractical and possibly dangerous at a site. Thus, unless the sample is known to consist of material listed as less hazardous than flammable liquid (or solid) on Attachment A, it is considered a flammable liquid (or solid) and shipped as such.

For any hazardous material shipment, utilize the shipping checklist (Attachment C) as a guideline to ensure that all sample-handling requirements are satisfied.

5.4 PACKAGING AND SHIPPING OF SAMPLES CLASSIFIED AS FLAMMABLE LIQUID (OR SOLID)

5.4.1 Packaging

Applying the word "flammable" to a sample does not imply that it is in fact flammable. The word prescribes the class of packaging according to DOT regulations.

1. Collect sample in the prescribed container (see Guideline FT-7.06) with nonmetallic, Teflon-lined screw cap. To prevent leakage, fill container no more than 90% full. If an air space in the sample container would affect sample integrity, place that container within a second container to meet the 90% requirement.

2. Complete sample label and identification tag (see Guideline FT-7.05) and attach securely to sample container.

3. Seal container and place in 2-mil thick (or thicker) polyethylene bag, one sample per bag. Position identification tag so that it can be read through bag. Seal bag.

4. Place sealed bag inside metal can and cushion it with enough noncombustible, absorbent material (for example, vermiculite or diatomaceous earth) between the bottom and sides of the can and bag to prevent breakage and absorb leakage. Pack one bag per can. Use clips, tape, or other positive means to hold can lid securely, tightly and permanently. Mark can as indicated in Paragraph 1 of Section 5.4.2, below.

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5. Place one or more metal cans (or single 1-gallon bottle) into a strong outside container, such as a metal picnic cooler or a DOT-approved fiberboard box. Surround cans with noncombustible, absorbent cushioning material for stability during transport. Mark containers as indicated in Paragraph 2 of Section 5.4.2.

5.4.2 Marking/Labeling

1. Use abbreviations only where specified. Place the following information, either-hand printed or in label form, on the metal can (or 1-gallon bottle):

   - Laboratory name and address.
   - "Flammable Liquid, n.o.s. UN1993" or "Flammable Solid, n.o.s. UN1325."

   Not otherwise specified (n.o.s.) is not used if the flammable liquid (or solid) is identified. Then the name of the specific material is listed before the category (for example, Acetone, Flammable Liquid), followed by its appropriate UN number found in the DOT hazardous materials table (49 CFR 172.101).

2. Place all information on outside shipping container as on can (or bottle), specifically:

   - Proper shipping name.
   - UN or NA number.
   - Proper label(s).
   - Addressee and sender.

Place the following labels on the outside shipping container: "Cargo Aircraft Only" and "Flammable Liquid" (or "Flammable Solid"). "Dangerous When Wet" label should be used if the solid has not been exposed to a wet environment. "Laboratory Samples" and "THIS SIDE UP" or "THIS END UP" should also be marked on the top of the outside container, and upward-pointing arrows should be placed on all four sides of the container.

5.4.3 Shipping Papers

1. Use abbreviations only where specified. Complete the carrier-provided bill of lading and sign certification statement (if carrier does not provide, use standard industry form, see Attachment D). Provide the following information in the order listed (one form may be used for more than one exterior container).

   - "Flammable Liquid, n.o.s. UN1993" or "Flammable Solid, n.o.s. UN1325."
   - "Limited Quantity" (or "Ltd. Qty.").
   - "Cargo Aircraft Only."
   - Net weight (wt) or net volume (vol), just before or just after "Flammable Liquid, n.o.s." or "Flammable Solid, n.o.s.," by item, if more than one metal can is inside an exterior container.
   - "Laboratory Samples" (if applicable).

2. Include Chain-of-Custody Record, properly executed (see Guideline FT-7.05), in outside container.

3. "Limited Quantity" of "Flammable Liquid, n.o.s." is limited to one pint per inner container. For "Flammable Solid, n.o.s.", net weight of inner container plus sample should not exceed one pound; total package weight should not exceed 25 pounds.

5.4.4 Transportation

1. Transport unknown hazardous substance samples classified as flammable liquids by rented or common carrier truck, railroad, or express overnight package services. Do not transport by any passenger-carrying air transport system, even if they have cargo-only aircraft. DOT regulations permit regular airline cargo-only aircraft, but difficulties with most suggest avoiding them. Instead, ship by airline carriers that only carry cargo.

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2. For transport by government-owned vehicle, including aircraft, DOT regulations do not apply. However, procedures described above, with the exception of execution of the bill of lading with certification, should still be used.

5.5 PACKAGING AND SHIPPING OF SAMPLES CLASSIFIED AS POISON "A"

This packaging, marking, labeling, and shipping method provides a worst-case procedure for materials classed as Poison A (49 CFR 173.328). In the absence of reliable data that exclude the possibility of the presence of Poison A chemicals or compounds (see Attachment B), these procedures must be followed.

5.5.1 Packaging

Applying the word "poisonous" to a sample does not imply that it is, in fact, poisonous, or how poisonous. It describes the class of packaging according to DOT regulations.

1. Collect samples in a polyethylene or glass container with an outer diameter narrower than the valve hole on a DOT specification #3A1800 or #3AA1800 metal cylinder. To prevent leakage, fill container no more than 90% full. Seal sample container.

2. Complete sample label and identification tag and attach securely to sample container.

3. Attach string or flexible wire to neck of the sample container; lower it into metal cylinder partially filled with noncombustible, absorbent cushioning material (for example, diatomaceous earth or vermiculite). Place only one container in metal cylinder. Pack with enough absorbing material between the bottom and sides of the sample container and the metal cylinder to prevent breakage and absorb leakage. After the cushioning material is in place, drop the end of the string or wire into the cylinder valve hole.

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4. Replace valve, torque to 250 ft-lb (for 1-inch opening), and replace valve protector on metal cylinder, using Teflon tape.

5. Mark and label cylinder as described in Paragraph 1 of Section 5.5.2.

6. Place one or more cylinders in DOT-approved outside container.

7. Mark and label outside container and complete shipping papers as described below.

5.5.2 Marking/Labeling

1. Use abbreviations only where specified. Place the following information, either hand-printed or in label form, on the side of the cylinder or on a tag wired to the cylinder valve protector.

   - "Poisonous Liquid, n.o.s." or "Poisonous Gas, n.o.s. NA9035."
   - Laboratory name and address.
   - DOT label "Poisonous Gas" (even if sample is liquid) on cylinder.

2. Put all information on metal cylinder on outside container. Print "Laboratory Sample" and "Inside Packages Comply With Prescribed Specifications" on top and/or front of outside container. Mark "THIS SIDE UP" on top of container and upward-pointing arrows on all four sides.

5.5.3 Shipping Papers

1. Use abbreviations only as specified. Complete carrier-provided bill of lading and sign certification statement (if carrier does not provide, use standard industry form, see Attachment D). Provide the following information in the order listed. (One form may be used for more than one exterior container.)

- "Poisonous Liquid, n.o.s. NA9035."
- "Limited Quantity" (or "Ltd. Qty.").
- Net weight (wt) or net volume (vol), just before or after "Poisonous Liquid, n.o.s.," of each cylinder, if more than one is inside the outer container.

2. Include a Chain-of-Custody Record, properly executed (see Guideline FT-7.05), in container or with cylinder.

3. Accompany shipping container to carrier and, if required, open outside container(s) for inspection.

5.5.4 Transportation

Transport unknown hazardous substance samples classified as Poison A only by ground transport or Government-owned aircraft. Do not use air cargo, other common-carrier aircraft, or rented aircraft.

5.6 TRANSPORT OF INVESTIGATION AND REMEDIATION WASTES

A number of types of wastes fall under this category and the packaging, marking, labeling and other shipping requirements will depend on the particular waste to be transported. Examples of wastes which may be generated during site investigations are decontamination or cleaning solutions, contaminated disposable items, test pit spoils, drilling cuttings or fluids and contaminated monitoring well discharges (see HS-1.06). Waste materials from remediation include excavation spoils, overpacked drums and discharges from drained lagoons or tanks.

In many cases, wastes generated during site investigations will be disposed of onsite and these relatively small volumes will be dealt with as part of the waste to be cleaned up or isolated during remediation. This avenue should be pursued, if feasible, to avoid the inconvenience of transportation and disposal which are disproportionately expensive for small volumes. If such a solution is approved, materials should be properly bagged, drummed, covered, buried, or otherwise contained at the end of each day (see Guideline HS-1.06).

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Those materials which must be transported for treatment, storage, or disposal should be packaged, labeled and marked in accordance with applicable regulations.

Many wastes generated during site investigation and remediation activities will probably be adequately handled under the classification "ORM-E" (i.e., other regulated materials, type E). This is a classification which DOT developed to cover substances which EPA has determined must be handled as hazardous wastes but for which no specific DOT hazardous materials designation exists (see 49 CFR 173, Subpart O). Types of wastes which would normally fall under this classification are contaminated disposable protective clothing and sampling equipment, spent soapy decontamination solutions and rinses, contaminated drilling cuttings or fluids and contaminated soils excavated during site investigations or remediation.

Spent solvents used for decontamination of sampling equipment (e.g., acetone or methanol) should be referenced by the actual product name. Liquids from drums or tanks should be specified as accurately as possible based on results of lab analysis or reliable records. If the liquid is known to be a solvent, organic liquid, or spent distillation bottoms, it should be referenced by its actual or generic name from the Hazardous Materials Table. In cases requiring emergency actions where the identity of a substance is not accurately known, place the substance in one of the general hazard classes in 49 CFR 173.2. The choice of class should be conservative; that is, use the highest priority class based on available information as described in Section 5.3.2 in this Guideline

The following steps for preparing hazardous materials for shipment were extracted from the "Hazardous Materials Transportation Guide for Shippers" published by the U.S. DOT. References are to CFR Title 49.

1. Determine the Proper Shipping Name

   The shipper must determine the proper shipping name of the materials as listed in the Hazardous Materials Table, §172.101, Column (2).

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2. Determine the Hazard Class or Classes

   a. Refer to the Table, §172.101, Column (3) and locate the hazard class of the material or follow the steps described in Section 5.3.2 of this Guideline.

   b. If more than one class is shown for the proper shipping name, determine the proper class by definition.

   c. If the material has more than one hazard, classify the material based on the order of hazards in §173.2.

3. Select the Proper Identification Number

   a. Refer to the Table, §172.101, Column (3a) and select the Identification Number (ID) that corresponds to the proper shipping name and hazard class.

   b. Enter the ID Number(s) on the shipping papers and display them, as required, on packaging, placards, and/or orange panels.

4. Determine the Mode(s) of Transport to Ultimate Destination*

   a. As a shipper, you must assure yourself that the shipment complies with the various modal requirements.

   b. The modal requirements may affect the following:

      (1) Packaging

      (2) Quantity per Package

      (3) Marking

      (4) Labeling

* For example, truck, rail or air.

(5) Shipping papers

(6) Certification

5. Select the Proper Label(s) and apply as required

Required labels are based on the hazard class of the substance to be shipped. The Ebasco Hazardous Materials Transportation Guide contains information on selection of labels, marking of containers, completion of shipping forms and manifests, and placarding of vehicles. No placards are required on vehicles transporting ORM-E substances or limited quantities of any hazardous materials (e.g., hazardous samples as discussed in Section 5.4).

a. Refer to the Table, §172.101, Column (4) for required label(s).

b. For details in labeling refer to:

(1) Additional Labels, §172.402

(2) Location of Labels, §172.406

(3) Packaging (Mixed or Consolidated), §172.404(a) and (b)

(4) Packages Containing Samples, §172.402(h)

(5) Radioactive Materials, §172.403

(6) Authorized Label Modification, §172.405

6. Determine and Select the Proper Packagings

a. Refer to the Table, §172.101, Column (5a) for exceptions and Column (5b) for authorized packagings. Consider the following when selecting an authorized container: Quantity per package; Cushioning material, if required; Proper closure and reinforcement; Proper pressure; Outage; etc., as required.

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b. If packaged by a prior shipper, make sure the packaging is correct and in proper condition for transportation.

7. Mark the Packaging (Including Overpacks)

a. Apply the required markings (¥172.300); Proper shipping name and ID number, when required (¥172.301); Name and address of Consignee and Consignor (¥172.306).

b. For details and other required markings, see ¥172.300 through ¥172.338.

8. Prepare Shipping Papers

a. The basic requirements for preparing shipping papers include: proper shipping name; hazard class; ID number; total quantity; shipper's certification.

b. Make all entries on the shipping papers, using the information required, and in proper sequence (¥172.202).

c. For additional requirements, see ¥172.200 through ¥172.205.

9. Certification

a. Each shipper must certify, by printing (manually or mechanically) on the shipping papers, that the materials being offered for shipment are properly classified, described, packaged, marked, and labeled, and are in proper conditions for transportation according to the applicable DOT Regulations (¥172.204).

b. For surface shipment, see ¥172.204(a) and (b); for air shipments, see ¥172.204(c).

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10. Loading, Blocking, and Bracing

When loading hazardous materials into the transport vehicle or freight container, each package must be loaded, blocked, and braced in accordance with the requirements for the mode of transport.

a. If the shipper loads the freight container or transport vehicle, the shipper is responsible for the proper loading, blocking, and bracing of the materials.

b. If carrier personnel do the loading, the carrier is responsible.

11. Determine the Proper Placard(s)

Each person who offers hazardous materials for transportation must determine that the placarding requirements have been met.

a. For highway, unless the vehicle is already correctly placarded, the shipper must provide the required placard(s) and required identification number(s) (¥172.506).

b. For rail, if loaded by the shipper, the shipper must placard the rail car if placards are required. (¥172.508).

c. For air and water shipments, the shipper has the responsibility to apply the proper placards.

12. Hazardous Waste/Hazardous Substance

a. If the material is classed as a hazardous waste or hazardous substance, most of the above steps will be applicable.

b. Pertinent Environmental Protection Agency Regulations are found in the Code of Federal Regulations, Title 40, Part 262.

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6.0 REFERENCES

1. U.S. Department of Transportation, 1983. Hazardous Materials Regulations, 49 CFR 171-177.

2. Ebasco Services, Inc., 1985. Hazardous Materials Transportation Guide.

3. Program Guideline FT-7.05 - Sample Identification and Chain of Custody

4. Program Guideline FT-7.06 - Sample Preservation

5. Program Guideline FT-7.13 - Compatibility Testing

6. Program Guideline HS-1.06 - Control of Contaminated Material

7.0 ATTACHMENTS

Attachment A - DOT Hazardous Material Classification (49 CFR 173.2)

Attachment B - DOT List of Class "A" Poisons (49 CFR 172.101)

Attachment C - Hazardous Materials Shipping Checklist

Attachment D - Standard Industry Certification Form

1. Radioactive material (except a limited quantity)
2. Poison A
3. Flammable gas
4. Nonflammable gas
5. Flammable liquid
6. Oxidizer
7. Flammable solid
8. Corrosive material (liquid)
9. Poison B
10. Corrosive material (solid)
11. Irritating material
12. Combustible liquid (in containers having capacities exceeding 110 gallons [416 liters])
13. ORM-B
14 ORM-A
15. Combustible liquid (in containers having capacities of 110 gallons [416 liters] or less)
16. ORM-E

ATTACHMENT A

DOT HAZARDOUS MATERIAL CLASSIFICATION (49 CFR 173.2)

Material	Physical State At Standard Temperature
Arsine	Gas
Bromoacetone	Liquid
Chloropicrin and methyl chloride mixture	Gas
Chloropicrin and nonflammable, nonliquefied compressed gas mixture	Gas
Cyanogen chloride	Gas (>13.1°C)
Cyanogen gas	Gas
Gas identification set	Gas
Gelatin dynamite (H. E. Germaine)	---
Grenade (with Poison "A" gas charge)	---
Hexaethyl tetraphosphate/compressed gas mixture	Gas
Hydrocyanic (prussic) acid solution	Liquid
Hydrocyanic acid, liquefied	Gas
Insecticide (liquefied) gas containing Poison "A" or Poison "B" material	Gas
Methyldichloroarsine	Liquid
Nitric oxide	Gas
Nitrogen peroxide	Gas
Nitrogen tetroxide	Gas
Nitrogen dioxide, liquid	Gas
Parathion/compressed gas mixture	Gas
Phosgene (diphosgene)	Liquid

ATTACHMENT B

DOT LIST OF CLASS "A" POISON (49 CFR 172.101)

Packaging

1. Check DOT 172.500 table for appropriate type of package for hazardous substance.
2. Check for container integrity, especially the closure.
3. Check for sufficient absorbent material in package.
4. Check for sample tags and log sheets for each sample, and chain-of-custody record.

Shipping Papers

1. Check that entries contain only approved DOT abbreviations.
2. Check that entries are in English.
3. Check that hazardous material entries are specially marked to differentiate them from any nonhazardous materials being sent using same shipping paper.
4. Be careful all hazardous classes are shown for multiclass materials.
5. Check total amounts by weight, quantity, or other measures used.
6. Check that any limited-quantity exemptions are so designated on the shipping paper.
7. Offer driver proper placards for transporting vehicle.
8. Check that certification is signed by shipper.
9. Make certain driver signs for shipment.

RCRA Manifest

1. Check that approved state/federal manifests are prepared.
2. Check that transporter has the following: valid EPA identification number, valid driver's license, valid vehicle registration, insurance protection, and proper DOT labels for materials being shipped.
3. Check that destination address is correct.
4. Check that driver knows where shipment is going.
5. Check that the driver is aware of emergency procedures for spills and accidents.
6. Make certain driver signs for shipment.
7. Make certain one copy of executed manifest and shipping document is retained by shipper.

NO PCS	SIZE	GROSS WEIGHT	H M	D O T. PROPER SHIPPING NAME	HAZARD CLASS	CODE	P G	CONTAINER NUMBERS	PLC	BULK
1	55 gal	200 lbs.	x	Nitric Acid, fuming	Oxidizer	55-OX	C	1	✓	
1	55 gal	450 lbs	x	Flammable Liquid, n.o.s.	Flammable Liquid	55-FLM	—	2		✓
1	55 gal	250 lbs	x	Flammable liquid, n.o.s	Flammable Liquid	55-FL	B	3	✓	
1	55-A	12 lbs.	x	Bromine	Corrosive Material	55-CM	C	4	✓	

SHIPPER'S CERTIFICATION

This is to certify that the above named materials are properly classified, described, packaged, marked and labeled and are in proper condition for transportation according to the applicable regulations of the Department of Transportation.

Shipper's Signature

Placards Req'd _____

Shipment Date _____ Manifest No. _____

Shipment Work Order _____

Service Order No. _____

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ATTACHMENT D

STANDARD INDUSTRY CERTIFICATION FORM

CATEGORY:	TITLE:	No. FT-13.03
Field Technical	Site Logbook	DATE: 01/06/86
PREPARED BY: R T Fellman Robert Fellman	APPROVED BY: M K Yates Michael K Yates	REVISION: 0

CONTENTS

CATEGORY:	TITLE:	No. FT-13.03
Field Technical	Site Logbook	DATE: 01/06/86

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1.0 PURPOSE

This guideline describes the process for keeping a site logbook.

2.0 SCOPE

The site logbook is a controlled document which records all major on-site activities during a Remedial Investigation/ Feasibility Study. At a minimum, the following activities/events should be recorded in the site logbook:

- Arrival/departure of site visitors
- Arrival/departure of equipment
- Sample pickup (chain-of-custody form numbers, carrier, time)
- Sampling activities/sample logsheet numbers
- Start or completion of borehole/trench/monitoring well installation or sampling activities
- Health and Safety issues

The site logbook is initiated at the start of the first on-site activity (e.g., initial reconnaissance survey). Entries are made for every day that on-site activities take place which involve RI/FS contractor personnel. One current site logbook is maintained per site.

The site logbook becomes part of the permanent site file maintained in the RI contractor's office. Because information contained in the site logbook may be admitted as evidence in cost recovery or other legal proceedings, it is critical that this document be properly maintained.

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3.0 DEFINITIONS

Site Logbook - The logbook is a bound notebook with consecutively numbered pages that cannot be removed. Upon entry of data, the logbook requires signature by the responsible site leader (see Section 5.1).

4.0 RESPONSIBILITIES

The site logbook is issued by the Regional Manager (or his designee) to the Site Manager for the duration of the project. The Site Manager releases the site logbook to the Field Operations Leader or other person responsible for the direction of on-site activities (e.g., Reconnaissance Survey Team Leader, Sampling Team Leader). It is the responsibility of this person (or his designee) to keep the site logbook current while in his possession, and return it to the Site Manager or turn it over to another field team. Following the completion of all fieldwork, the site logbook is returned to the Site Manager for inclusion in the permanent site files.

5.0 GUIDELINES

5.1 GENERAL

The cover of each site logbook contains the following information:

- Project Name and EPA Work Assignment Number
- Ebasco Project Number (4236.XXX)
- RI/FS Contractor and Site Manager's Name
- Sequential Book Number
- Start Date
- End Date

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Daily entries into the logbook may contain a variety of information. At the beginning of each day the following information must be recorded:

- Date
- Start time
- Weather
- All field personnel present
- Any visitors present

During the day, a summary of all site activities and level of personal protection should be recorded in the logbook. The information need not duplicate that recorded in other field notebooks (e.g., sample logbook, Site Geologist's notebook, Health and Safety Officer's notebook, etc.), but should summarize the contents of these other notebooks and refer to the page locations in these notebooks for detailed information. An example of a site logbook page is shown in Attachment A.

The sample logsheet for each sample collected (see Guideline FT-7.04) must be referenced. If measurements are made at any location, the measurements and equipment used must either be recorded in the site logbook or reference must be made to the notebook and page number(s) on which they are recorded (see Attachment A).

All entries should be made in black pen. No erasures are permitted. If an incorrect entry is made, the data should be crossed out with a single strike mark, and initialed and dated. At the completion of entries by any individual, the logbook must be signed. It must also be signed by the Field Operations Leader or responsible site leader at the end of each day.

5.2 PHOTOGRAPHS

When movies, slides, or photographs are taken of a site or any monitoring location, they are numbered to correspond to logbook entries. The name of the photographer, date, time, site location, site description, and weather conditions are entered in the logbook as the photographs are taken. A series entry may

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be used for rapid-sequence photographs. The photographer is not required to record the aperture settings and shutter speeds for photographs taken within the normal automatic exposure range. However, special lenses, films, filters, and other image-enhancement techniques must be noted in the logbook. If possible, such techniques should be avoided, since they can adversely affect the admissibility of photographs as evidence. Chain-of-custody procedures depend upon the subject matter, type of film, and the processing it requires. Film used for aerial photography, confidential information, or criminal investigations require chain-of-custody procedures. Adequate logbook notations and receipts may be used to account for routine film processing. Once processed, the slides of photographic prints shall be serially numbered and labeled according to the logbook descriptions.

6.0 REFERENCES

None.

7.0 ATTACHMENTS

Attachment A - Typical Site Logbook Entry

START TIME: 08:00 DATE: 9/14/85

SITE LEADER: _____

PERSONNEL: EBASCO	DRILLER	EPA

WEATHER: Clear, 68°F, 2-5 mph wind from SE

ACTIVITIES:

1. Steam jenny and fire hoses were set up.

2. Drilling activities at well_____resumed. Rig geologist was _____. See Geologist's Notebook, No. 1, page 29-30, for details of drilling activity. Sample No. 123-21-S4 collected; see sample logbook, page 42. Drilling activities completed at 11:50 and a 4" stainless steel well installed. See Geologist's Notebook, No. 1, page 31, and well construction details for well_____.

3. Drilling rig No. 2 steam-cleaned at decontamination pit. Then set up at location of well_____.

4. Well_____drilled. Rig geologist was_____. See Geologist's Notebook, No. 2, page ____ for details of drilling activities. Sample numbers 123-22-S1, 123-22-S2, and 123-22-S3 collected; see sample logbook, pages 43, 44, and 45.

5. Well_____was developed. Seven 55-gallon drums were filled in the flushing stage. The well was then pumped using the pitcher pump for one hour. At the end of the hour, water pumped from well was "sand-free".

6. EPA remedial project manager arrives on-site at 14:25 hrs.

7. Large dump truck arrives at 14:45 and is steam-cleaned. Backhoe and dump truck set up over test pit_____.

8. Test pit_____dug with cuttings placed in dump truck. Rig geologist was _____. See Geologist's Notebook, No. 1, page 32, for details of test pit activities. Test pit subsequently filled. No samples taken for chemical analysis. Due to shallow groundwater table, filling in of test pit_____ resulted in a very soft and wet area. A mound was developed and the area roped off.

9. Express carrier picked up samples (see Sample Logbook, pages 42 through 45) at 17:50 hrs. Site activities terminated at 18:22 hours. All personnel offsite, gate locked.

_____
Field Operations Leader

ATTACHMENT A

TYPICAL SITE LOGBOOK ENTRY